

Independent claims 1, 13, and 18 submitted herewith all recite a drop hammer comprising a housing member, a ram member, a helmet member, and a lifting assembly. In particular, each of these claims recites that the lifting assembly is at least partly disposed within the housing chamber above the ram member.

In contrast, the Scheid et al. reference does not disclose, teach, or suggest a drop hammer having a lifting assembly that is disposed at least partly within a housing chamber.

To the contrary, the Scheid et al. reference discloses a pile driver that operates in at least one diesel mode (hard hammering) and in a pressure air operating mode (soft hammering). The diesel mode is generally conventional. Fuel is pressurized and ignited by a falling hammering piston within a working area. The ignited fuel drives the hammering piston up, at which point the hammering piston begins to fall again and the cycle is repeated. Each time the hammering piston falls, it engages and drives the pile.

In the pressure air operating mode, the Scheid device employs a source of pressurized air, accumulator, and array of control and check valves that utilize pressurized air to raise the hammering piston. The Scheid et al. reference fails to describe in significant detail what happens to the pressures within the working space below the hammering piston when the hammering piston is falling during the pressure air operating mode. The only description in the Scheid et al. reference of the falling of the hammering piston is contained at col. 6, line 66, through col. 7, line 3:

After the hammering piston 26 has fallen onto the hammering member 12 and has moved the later and an object to be piled and contacting (sic) the hammering member 12 in downward direction, the operating cycle described above will start again.

For the following reasons, the Applicant respectfully submits that the Scheid et al. reference fails to disclose, teach, or suggest a structure that effectively applies a preload force to the hammering member as recited in claims 1, 13, and 18.

Initially, while the Scheid et al. reference describes the hammering piston being driven above the working slot 36 in the diesel mode (e.g., column 7, lines 11-13), the Scheid et al. reference fails to teach that the hammering piston is driven to a point above the working slot 36 in the pressure air operating mode. To the contrary, the pressure air operating mode is described as "soft hammering," which suggests that the hammering piston is raised less than in the either of the diesel modes. Accordingly, it is not clear from the Scheid et al. reference

whether the working slot 36 forms a function similar to the vent port as recited in claims 1, 13, and 18 when in the pressure air operating mode.

In addition, the description of the pressure air operating mode in the Scheid et al. reference further completely fails to disclose, teach, or suggest that the air pressure within the working space be such that a preload force is applied to the hammering member in the pressure air operating mode as recited in claims 1, 13, and 18. To the contrary, as described in the Scheid et al. reference, the air pressure within the working space appears highly dependent upon the air pressure within the accumulator. The Applicant thus respectfully submits that the Scheid et al. reference does not clearly disclose a structure that would operate in a manner similar to that of the structure recited in claims 1, 13, and 18.

The Applicant respectfully submits that the Scheid et al. reference does not clearly disclose, teach, or suggest the arrangement of a vent port to introduce ambient air under a hammering piston to apply a preload force the hammering member struck by the hammering piston as recited in claim 1, 13, and 18.

The Examiner recognized that the Scheid et al. reference failed to include a lifting assembly at least partly disposed within the housing chamber above the ram member as recited in claims 1, 13, and 18. The Examiner's rejection under 35 USC § 103 thus combined the teachings of the Scheid et al. reference with those of the Martin reference. The Applicant respectfully submits that Examiner failed to establish proper motivation for one of ordinary skill in the art to combine the teachings of the conventional drop hammer disclosed in the Martin reference with the dual mode hammer system disclosed in the Scheid et al. reference.

In particular, the Scheid reference describes the use of the pressurized air source, accumulator, and valve array to raise the hammering piston each cycle. By combining the Scheid and Martin references, the Examiner has created a drop hammer system with two independent means for raising the hammering piston each cycle. The Applicant respectfully submits that one of ordinary skill in the art would not be motivated to combine the complexity of the Scheid et al. system with the conventional drop hammer lifting assembly described in the Martin reference because doing so would yield a hammer system having redundant mechanisms for raising and dropping the hammer.

The Applicant further respectfully submits that, if one of ordinary skill in the art modifies the Scheid et al. reference to eliminate the pressure air lifting system and include only the mechanical lifting assembly of the Martin reference, the resulting system would not necessarily operate in the same manner as the invention recited in claims 1, 13, and 18. For example, the Martin reference discloses the use of conduits 4c to allow fluid to flow through the anvil 4 as the

hammer 3 strikes the anvil 4. These conduits would prevent the type of fluid compression between the hammer and anvil that creates the preload force described in claims 1, 13, and 18. The Applicant thus respectfully submits that, even if proper, the combination of the Scheid et al. and Martin reference would not necessarily operate in a manner that is similar to that of the systems and methods recited in claims 1, 13, and 18.

In summary, the Applicant respectfully submits that, absent the Applicant's own disclosure, the Examiner has failed to establish proper motivation for combining the Scheid and Martin references. And even if these references are combined, this combination would not necessarily function in the same manner as the Applicant's invention recited in claims 1, 13, and 18.

Claims 4-6, 8, 9, 12, 15, 19, and 21 further define claims 1, 13, and 18 and should be allowable for at least the reasons set forth above.

Submitted herewith is a document (entitled Exhibit A - Listing of All Claims and Amendments (09-07-2006)) containing a listing of the claims as currently presented. The Listing attached herewith contains the text of each pending claim, along with any amendments made hereby (illustrated using strikethrough and underlining) and the status of each pending claim.

Given the foregoing, the Applicant respectfully submits that currently pending claims 1, 4-6, 8, 9, 12, 13, 15, 18, 19, and 21 are in condition for allowance, and such allowance is respectfully requested. If there is any matter which could be expedited by consultation with the Applicant's attorney, such would be welcome. The Applicant's attorney can normally be reached at the telephone number below.

Signed at Bellingham, County of Whatcom, State of Washington this 7th day of September, 2006.

Respectfully submitted,

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CERTIFICATE OF MAILING
37 C.F.R. §1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Signature: Susie Hubka
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Date: September 7, 2006